

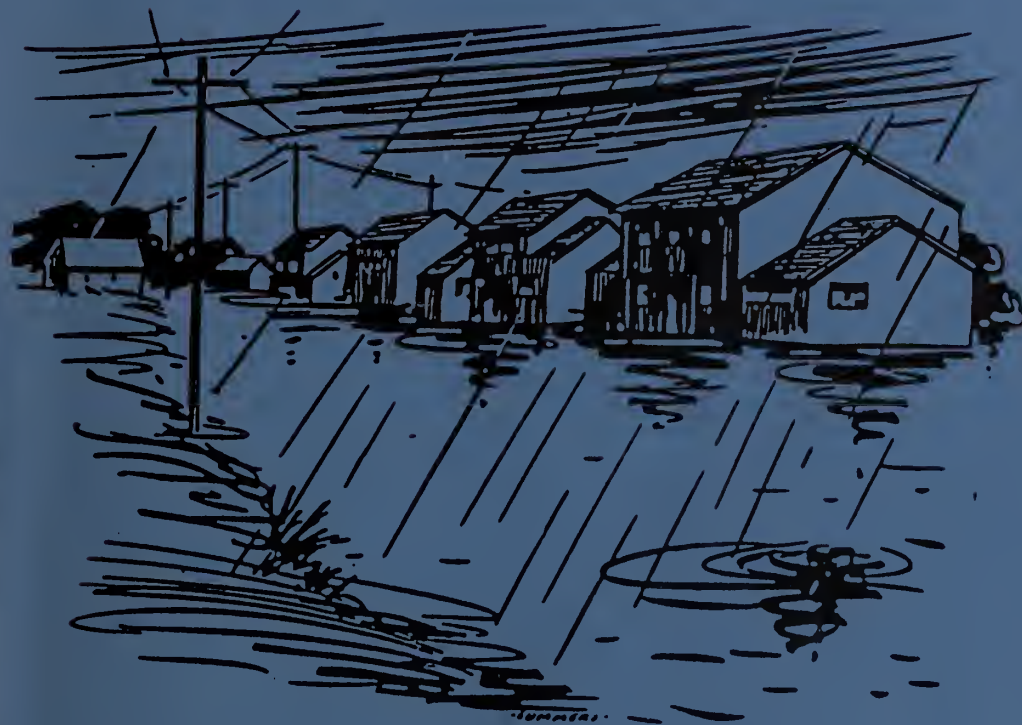
Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

24500
FLOODPLAIN MANAGEMENT STUDY

CITY OF MARKESAN

GREEN LAKE COUNTY, WISCONSIN



CITY OF MARKESAN

PREPARED BY THE
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
MADISON, WISCONSIN
IN COOPERATION WITH
GREEN LAKE COUNTY, WISCONSIN
AND THE
WISCONSIN DEPARTMENT OF NATURAL RESOURCES
JULY 1985

AD-33 Bookplate
(1-43)

NATIONAL

**A
G
R
I
C
U
L
T
U
R
A
L**



LIBRARY

Table of Contents

	<u>Page</u>
Introduction	1
Study Area Description	1
Vicinity Map	2
Natural and Beneficial Floodplain Values	3
Flooding Problems	3
Existing Floodplain Management	3
Alternatives for Mitigating Flood Damages to Existing and Future Development	3

Appendices

- A. Flood Boundary Maps
- B. Flood Profiles
- C. Typical Sections
- D. Elevation Reference Marks
- E. Tabulation of Water Surface Elevations, Discharges, and Floodway Tables
- F. Investigations and Analysis
- G. Glossary
- H. Bibliography

City of Markesan Floodplain Management Study

Introduction

The purpose of this study is to define the flood characteristics of the Grand River and two tributaries within the corporate limits of the city. The city of Markesan requested the study through Green Lake County and the Wisconsin Department of Natural Resources (DNR).

This report is prepared for use by the local people in planning the use and regulation of the floodplain within the city.

The 100-year floodplain has been delineated. The high water elevations and floodplain are based on 5-year projected land use of the watershed, stream, floodplain, and existing road crossings.

The Soil Conservation Service carries out floodplain management studies in accordance with Federal Level Recommendation 3 of "A Unified National Program for Floodplain Management," and Section 6 of Public Law 83-566. The principles contained in Executive Order 11988, Floodplain Management, are addressed in this part.

In Wisconsin, the Soil Conservation Service coordinates floodplain management studies with the Wisconsin DNR, through a joint coordination agreement entered into in October 1978. The Wisconsin Water Resources Act (Chapter 614, Laws of Wisconsin, 1965) authorizes the DNR, Division of Enforcement, to establish and upgrade minimum standards for floodplain regulations.

Study Area Description

The city of Markesan is located in the southeast quarter of Green Lake County. Green Lake County is located in central Wisconsin. The study area consists of the floodplain adjacent to 3.5 miles of the Grand River and two tributaries. Both tributaries enter the Grand River from the north. The first tributary enters east of High Street. This tributary was studied a distance of 0.7 miles. The study ends adjacent to the high school track. This tributary is the outlet of Little Green Lake. The outlet is a culvert with an inlet box to control the lake level. The outlet, which is under State Highway 44 is assumed stable. The flow used in the study is based on the uncontrolled drainage area below the lake of 1890 acres (2.95 sq. mi.). The second tributary enters the Grand River between Willow Court and the sewage treatment plant. The drainage area is 732 acres (1.14 sq. mi.) and drains the steep area starting at State Highway 44 and County Highway H and includes the industrial park and high school.

The Grand River was studied from Village Road (State Highway 73) up to the east city limits. The drainage area at the east or upstream city limits is 44.7 square miles. The drainage area of the downstream study limits is 58.6 square miles. The Grand River is in USGS Hydrologic Unit 04030201.

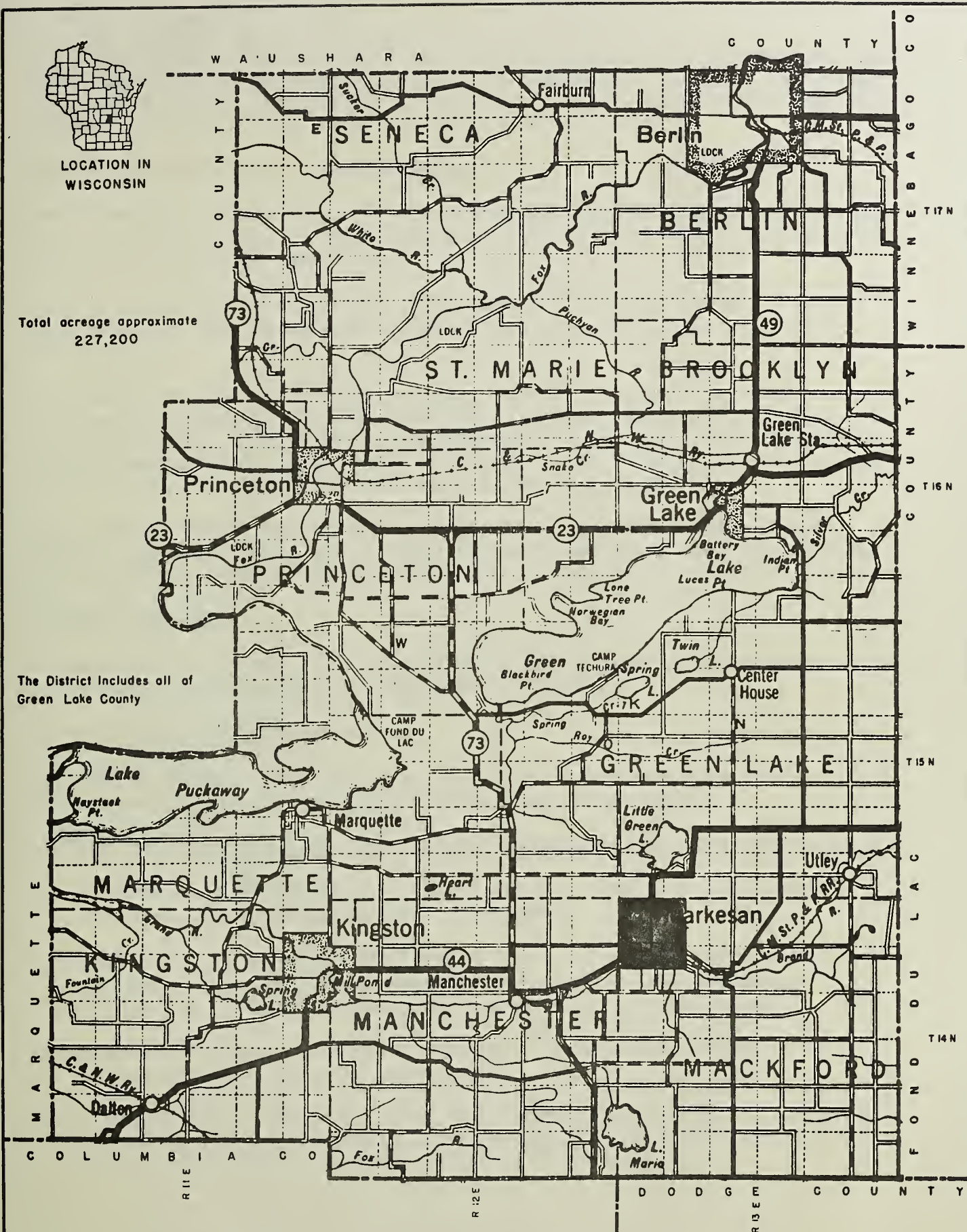
The climate is typically continental. January temperatures average 18° F. July, the warmest month, has an average temperature of 72° F. Precipitation averages 29 inches per year.



LOCATION IN WISCONSIN

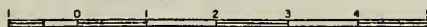
Total acreage approximate
227,200

The District Includes all of
Green Lake County



GREEN LAKE COUNTY SOIL CONSERVATION DISTRICT

Scale in miles



Prepared by the Cartographic Division, Soil Conservation Service, Region III, Cooperating with the District Governing Body

3-14-45
3-N-9965

The soils of the watershed consist of the Plano-Mendota-St. Charles association: well drained and moderately well drained, nearly level to sloping soils that have a subsoil mainly of silt loam and silty clay loam underlain by calcareous, gravelly or very gravelly, sandy loam glacial till.

Natural and Beneficial Floodplain Values

The undeveloped portion of the study area consists of the tree-lined stream-banks, scattered areas of sedges and grasses, a cattail wetland at the north-eastern end, and some cropland.

There are several natural values associated with this undeveloped floodplain that should be considered when selecting the best alternative to mitigate flood damage.

The floodplain provides habitat for many wildlife species. Included are waterfowl, pheasants, songbirds, muskrats, raccoons, squirrels, and mink. The grass and wetland plants help filter pollutants from runoff. The floodplain natural vegetation provides visual diversity to the landscape in the village. Large volumes of water are stored there during peak flows.

There are no records indicating the presence of threatened or endangered plants or animals in the area. There are no sites in the study area listed in the National Register of Historic Places. There is no prime farmland.

Flooding Problems

Although many storm and runoff events have been recorded in the Markesan area, no serious flooding events have occurred in the city.

Existing Floodplain Management

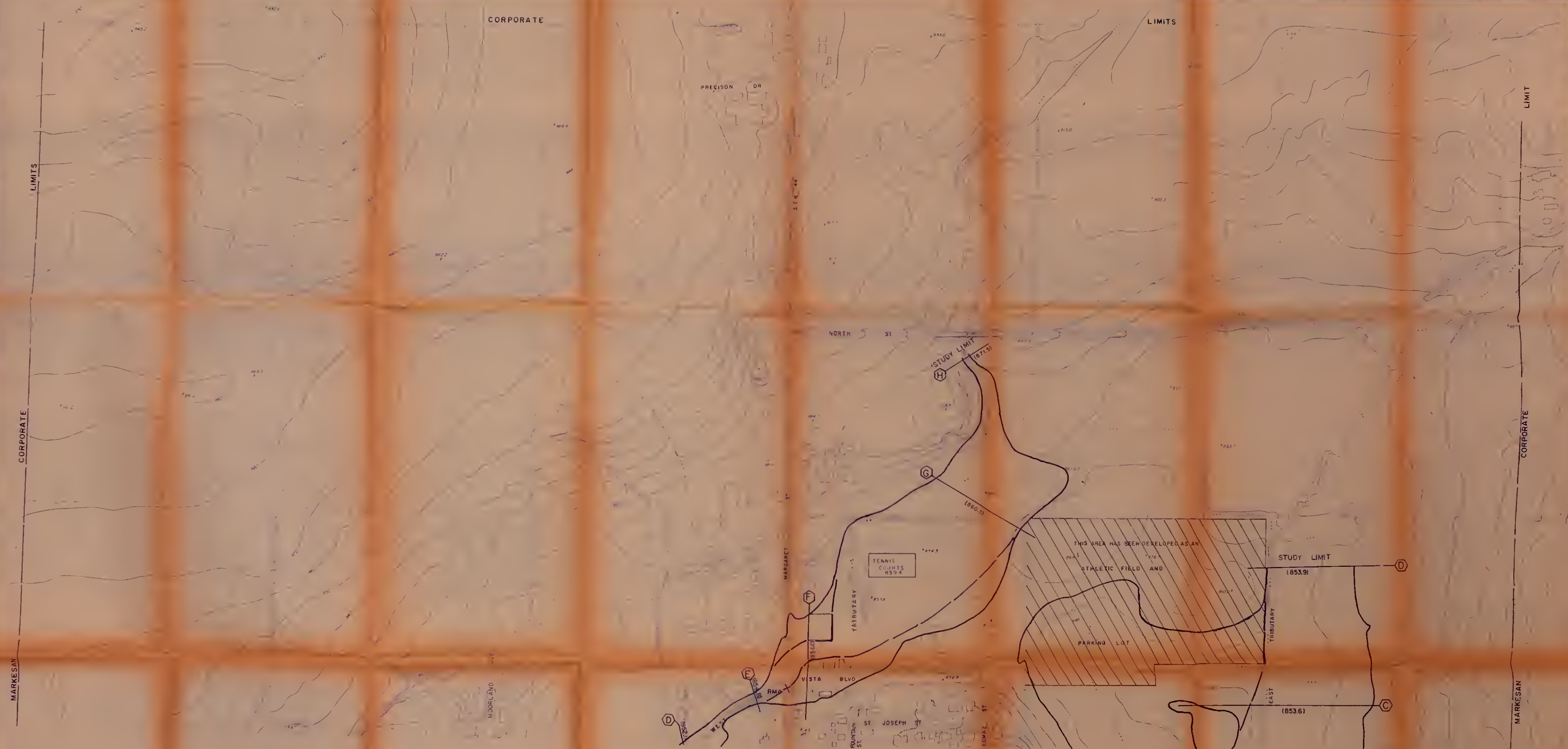
The city of Markesan does not have a floodplain ordinance. The city is in the emergency phase of the National Flood Insurance Program.

Alternatives for Mitigating Flood Damages to Existing and Future Development

- A. The city will incorporate the floodplain maps from this study into a floodplain ordinance and provide enforcement.
- B. Apply existing standards set forth in the city's subdivision control ordinance to regulate development in nonsuitable areas and minimize erosion and diffused surface water runoff within the watershed.
- C. Establish conservancy districts for those areas highly conducive to erosion and unsuitable for development.
- D. Relocate and/or floodproof those existing buildings in the floodplain by elevating, filling basements, and providing dryland access during floods. 52 buildings could be included in this alternative.

Appendix A

FLOOD BOUNDARY MAPS

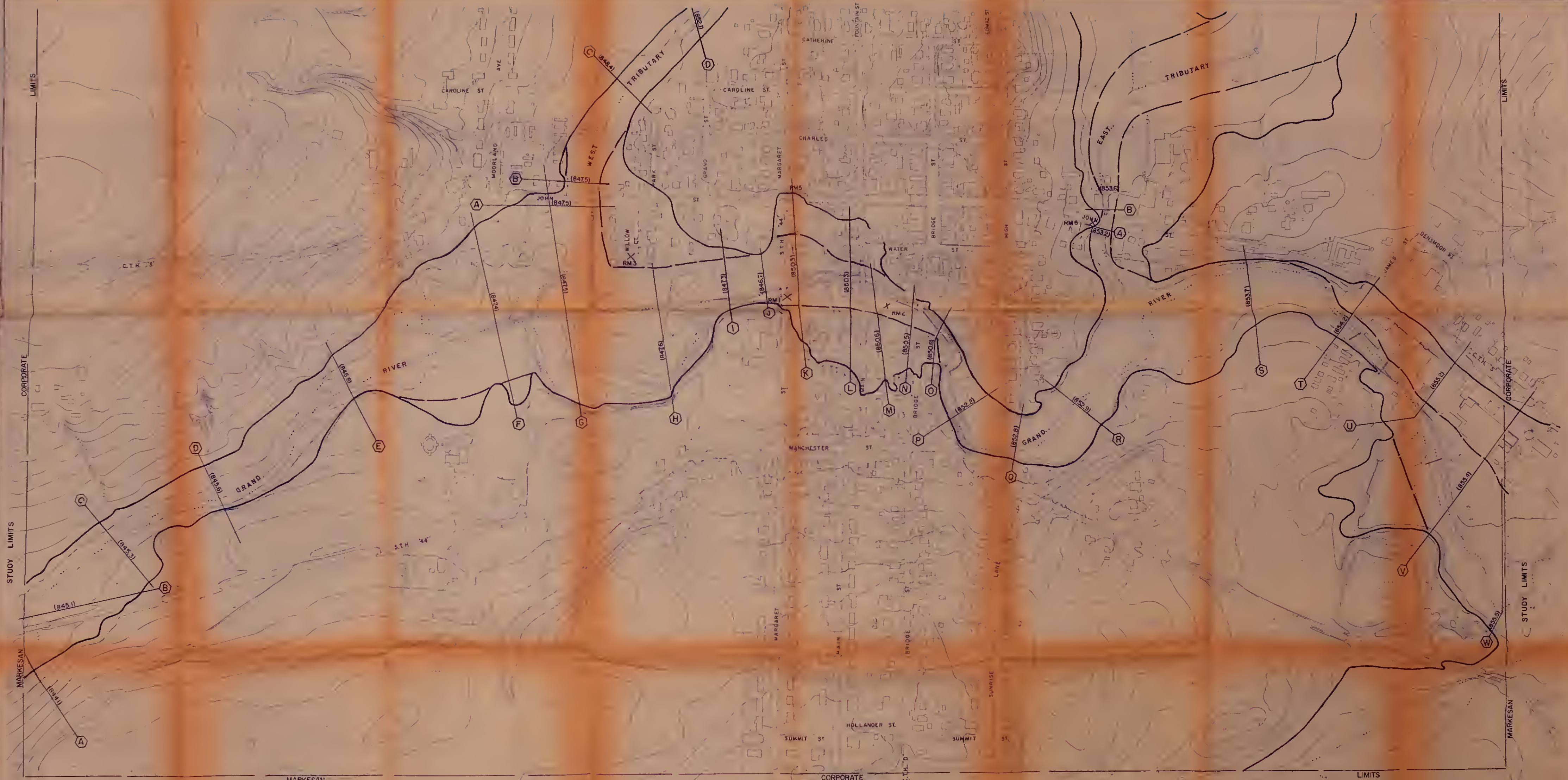


LEGEND
 --- 100 YEAR FLOOD WAY
 (A) CROSS SECTION LOCATION
 (1872.5) 100 YEAR FLOOD ELEVATION

AERIAL TOPOGRAPHIC SURVEY
 MARKESAN, WISCONSIN
 PREPARED FOR
 ARTHUR R ASSOCIATES
 FOND DU LAC, WISCONSIN
 DATE OF PHOTOGRAPHY NOVEMBER 18, 1970
 NOVEMBER 15, 1982
 SCALE IN FEET
 0 100 200 400 600 800

CITY OF MARKESAN FLOODPLAIN MANAGEMENT STUDY
 GREEN LAKE COUNTY, WISCONSIN
 USDA SOIL CONSERVATION SERVICE 1984





LEGEND
 --- 100 YEAR
 --- FLOOD WAY
 (A) CROSS SECTION LOCATION
 (872.5) 100 YEAR FLOOD ELEVATION

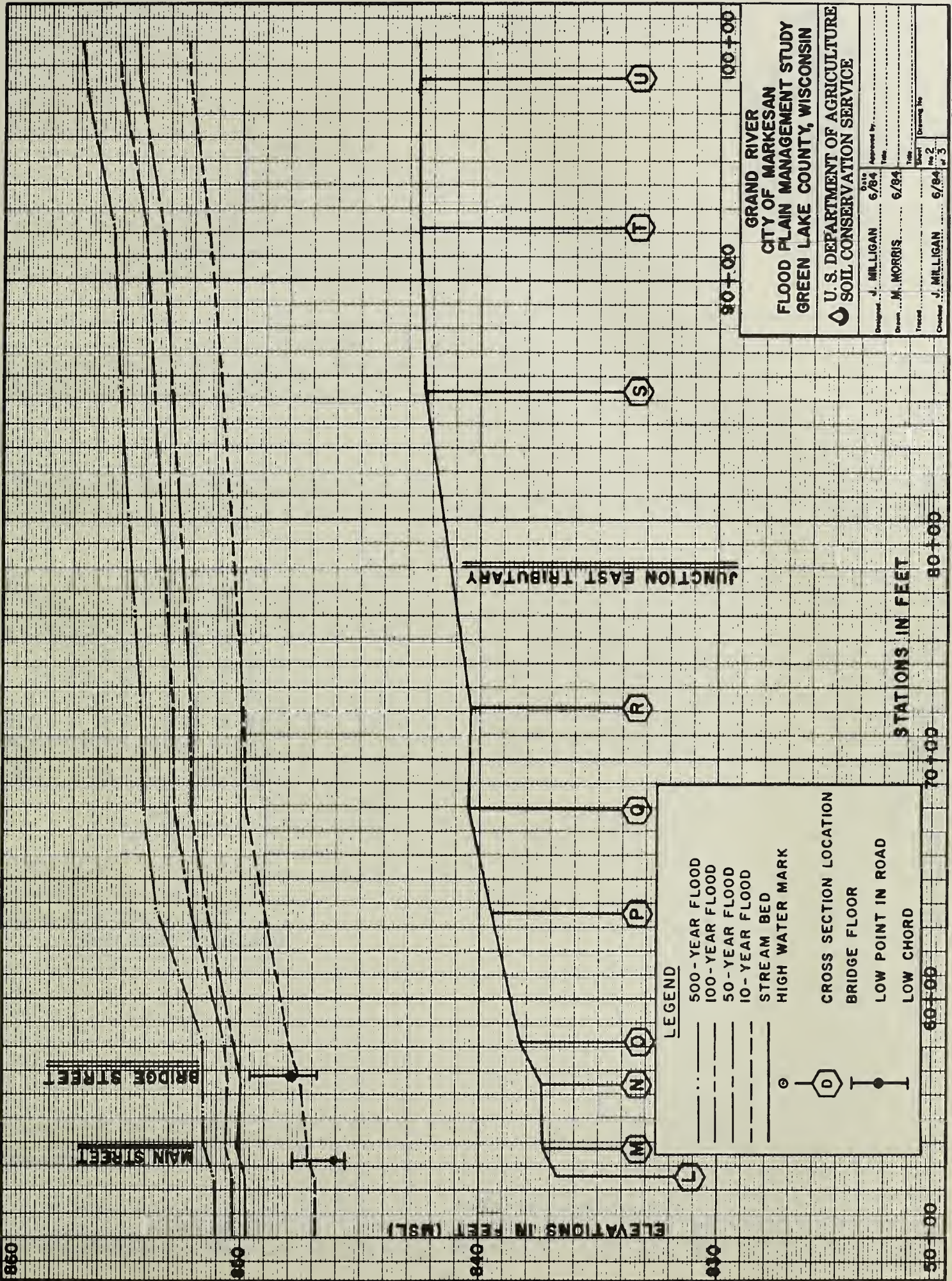
AERIAL TOPOGRAPHIC SURVEY
 MARKESAN, WISCONSIN
 PREPARED FOR
 ARTHUR B ASSOCIATES
 FOND DU LAC, WISCONSIN
 DATE OF PHOTOGRAPHY NOVEMBER 10, 1970
 NOVEMBER 15, 1982
 SCALE IN FEET
 0 200 400 600 800

CITY OF MARKESAN FLOODPLAIN MANAGEMENT STUDY
 GREEN LAKE COUNTY, WISCONSIN
 USDA SOIL CONSERVATION SERVICE 1984



Appendix B

FLOOD PROFILES



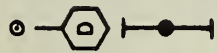
GRAND RIVER
CITY OF MARKESAN
FLOOD PLAIN MANAGEMENT STUDY
GREEN LAKE COUNTY, WISCONSIN

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed by	J. MILLIGAN	6/84	Approved by	
Drawn by	M. MORRIS	6/84	Title	
Traced by			Title	
Checked by	J. MILLIGAN	6/84	Sheet No.	2
			Drawing No.	3

LEGEND

..... 500-YEAR FLOOD
 ----- 100-YEAR FLOOD
 ----- 50-YEAR FLOOD
 ----- 10-YEAR FLOOD
 ----- STREAM BED
 ----- HIGH WATER MARK



CROSS SECTION LOCATION
 BRIDGE FLOOR
 LOW POINT IN ROAD
 LOW CHORD

CORPORATE, STUDY LIMIT

860

ELEVATIONS IN FEET (MSL)

880

840

100+00

110+00

120+00

130+00

STATIONS IN FEET

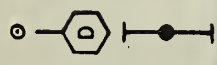
GRAND RIVER
 CITY OF MARKESAN
 FLOOD PLAIN MANAGEMENT STUDY
 GREEN LAKE COUNTY, WISCONSIN

U.S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

Designed by	J. MILLIGAN	Date	6/84
Drawn by	M. MORRIS	Date	6/84
Traced by	J. MILLIGAN	Date	6/84
Checked by	J. MILLIGAN	Date	6/84
Scale	1" = 100'	Sheet	3 of 3
Drawn by	J. MILLIGAN	Date	6/84

LEGEND

- 500-YEAR FLOOD
- 100-YEAR FLOOD
- 50-YEAR FLOOD
- 10-YEAR FLOOD
- STREAM BED
- HIGH WATER MARK



CROSS SECTION LOCATION
 BRIDGE FLOOR
 LOW POINT IN ROAD
 LOW CHORD

JCT GRAND RIVER

JOHN STREET

STUDY LIMIT

40+00

(C)

(B)

(A)

STATIONS IN FEET

30+00

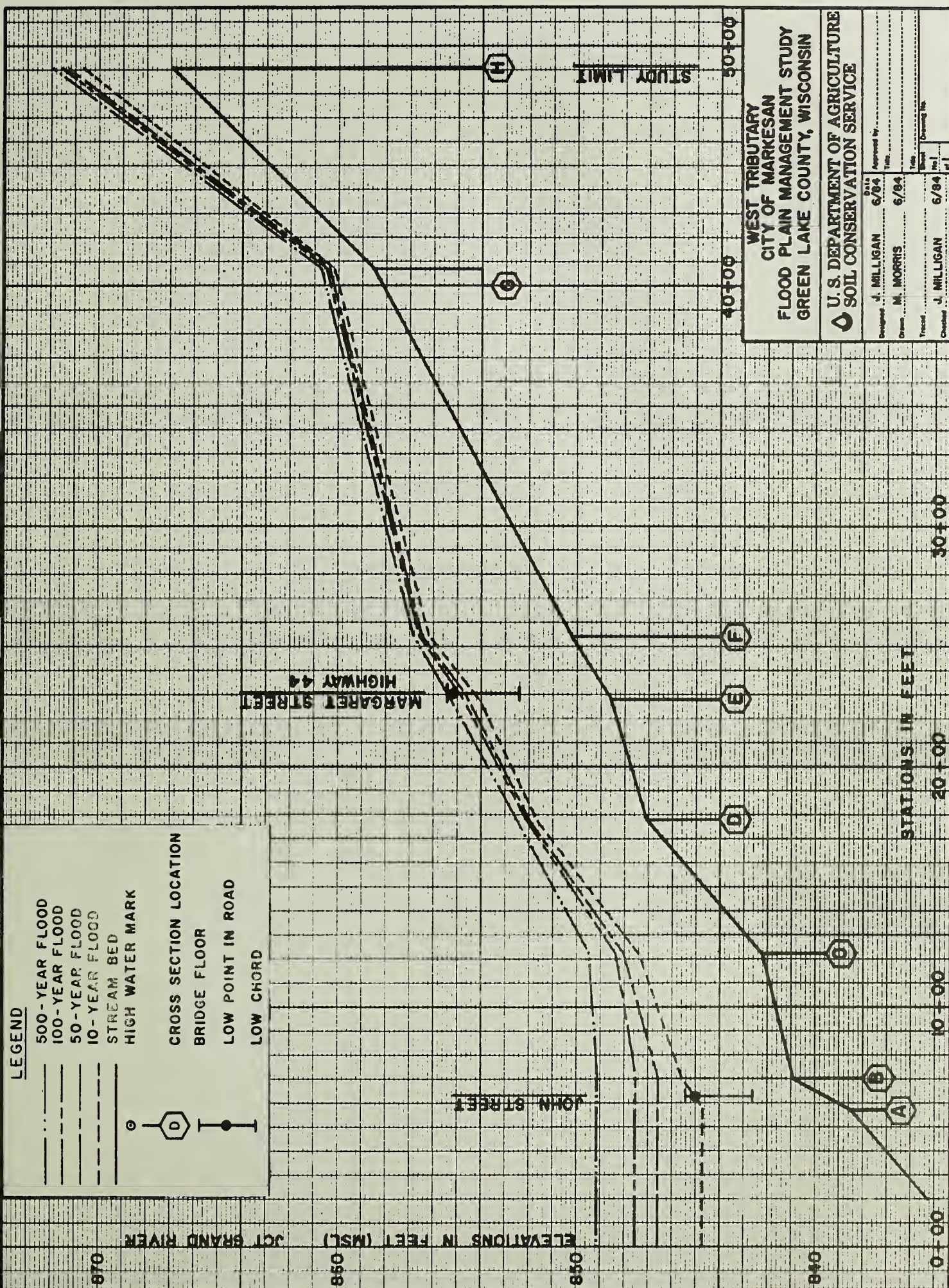
20+00

10+00

0+00

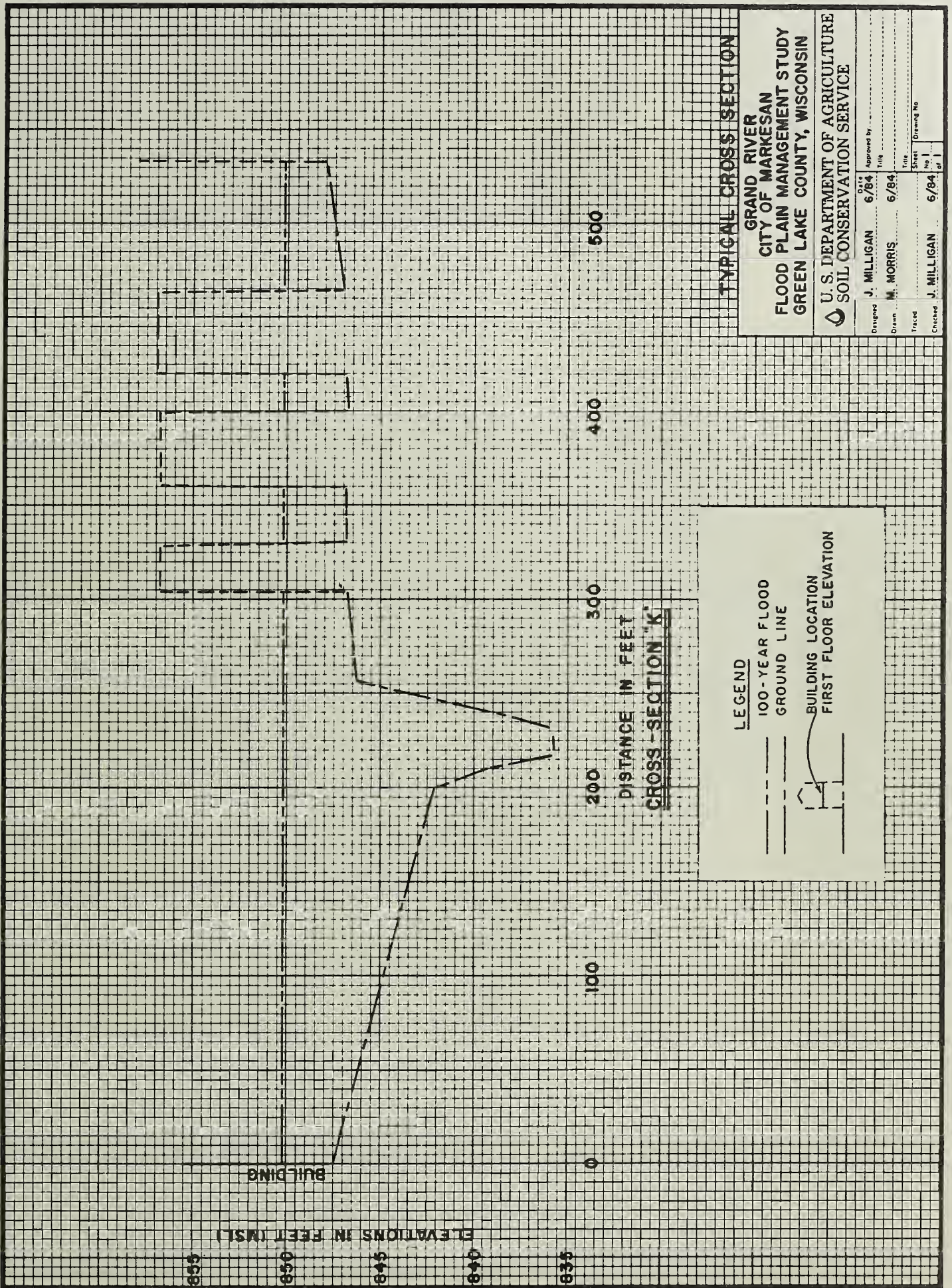
EAST TRIBUTARY
 CITY OF MARKESAN
 FLOOD PLAIN MANAGEMENT STUDY
 GREEN LAKE COUNTY, WISCONSIN
 U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

Designed by	J. MILLIGAN	Date	6/84
Drawn by	M. MORRIS	Date	6/84
Traced by	J. MILLIGAN	Date	6/84
Checked by	J. MILLIGAN	Date	6/84



Appendix C

TYPICAL SECTIONS



ELEVATIONS IN FEET (MSL)

660

655

650

645

640

635

200

100

DISTANCE IN FEET

CROSS-SECTION "D"

BUILDING

BUILDING

LEGEND

100-YEAR FLOOD

GROUND LINE

BUILDING LOCATION
FIRST FLOOR ELEVATION

TYPICAL CROSS SECTION

GRAND RIVER
CITY OF MARKESAN
FLOOD PLAIN MANAGEMENT STUDY
GREEN LAKE COUNTY, WISCONSIN

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed	J. MILLIGAN	Date	6/84	Approved by	
Drawn	M. MORRIS	Title	6/84		
Traced		Title			
Checked	J. MILLIGAN	Sheet	6/84	No.	1
		Drawing No.			

Appendix D

ELEVATION REFERENCE MARKS

ELEVATION REFERENCE MARKS

<u>Reference Mark</u>	<u>Elev. (MSL)</u>	<u>Description</u>
RM1	847.486	PBM Markesan, on STH44 in town, near E 1/16 corner, sec 6 & 7, T14N, R13E, 21' east of STH 44 (Margaret St.) in SE wingwall of bridge over Grand River, about 0.6' higher than road. Standard tablet stamped JDF 10 1952.
RM2	846.76	TP2, south rim of circular masonry wall around flower bed in park between Bridge Street and Main Street.
RM3	847.20	TP8, top of fire hydrant at the south end of Willow Court.
RM4	857.79	TP11, top of fire hydrant at corner of Vista Blvd. and STH 44 (Margaret Street).
RM5	851.66	TP10, top of fire hydrant at corner of STH 44 (Margaret Street) and CTH S (John Street).
RM6	857.47	TP16, top of fire hydrant at east Tributary near feed mill, on south side of CTH S (John Street).

Appendix E

TABULATION OF
WATER SURFACE ELEVATIONS
DISCHARGES
AND
FLOODWAY TABLES

Flooding Source		Discharge - Elevation									
Cross-section	Distance $\frac{1}{2}$	10 year		50 year		100 year		500 year		Elev. MSL	Elev. MSL
		Q CFS	Elev. MSL	Q CFS	Elev. MSL	Q CFS	Elev. MSL	Q CFS	Elev. MSL		
Corporate Limits	40										
A		3000	841.6	5000	843.2	6000	844.1	8100	845.5	845.5	845.5
		3000	841.6	5000	843.2	6000	844.1	8100	845.5	845.5	845.5
		State Highway 44									
B	305	3000	843.1	5000	844.4	6000	845.1	8100	846.5	846.5	846.5
C	665	3000	843.2	5000	844.6	6000	845.3	8100	846.7	846.7	846.7
D	1535	3000	843.5	5000	844.9	6000	845.6	8100	847.0	847.0	847.0
E	2485	3000	844.2	5000	846.0	6000	846.8	8100	848.3	848.3	848.3
F	3335	3000	844.7	5000	846.5	6000	847.4	8100	849.0	849.0	849.0
G	3715	3000	844.8	5000	846.7	6000	847.5	8100	849.1	849.1	849.1
H	4215	2940	844.8	4900	846.7	5890	847.6	7950	849.2	849.2	849.2
I	4595	2940	844.4	4900	846.4	5890	847.3	7950	848.8	848.8	848.8
J	4795	2940	844.7	4900	846.1	5890	846.7	7950	848.6	848.6	848.6
		(Margaret Street)									
K	4882	State Highway 44									
		2940	846.5	4900	849.7	5890	850.3	7950	851.0	851.0	851.0
L	4960	2940	846.8	4900	849.8	5890	850.3	7950	851.1	851.1	851.1
		Main Street									
M	5321	2940	847.3	4900	850.1	5890	850.6	7950	851.6	851.6	851.6
N	5381	2940	847.5	4900	850.1	5890	850.5	7950	851.4	851.4	851.4
		Bridge Street									
O	5678	2940	848.0	4900	850.3	5890	850.8	7950	851.6	851.6	851.6
P	5826	2940	849.0	4900	851.4	5890	852.2	7950	853.6	853.6	853.6
Q	6366	2940	849.8	4900	852.1	5890	852.8	7950	854.1	854.1	854.1
R	6786	2940	849.9	4900	852.2	5890	852.9	7950	854.2	854.2	854.2
S	7206	2350	850.9	3850	853.0	4650	853.7	6250	855.1	855.1	855.1
T	8546	2350	851.5	3850	853.4	4650	854.2	6250	855.4	855.4	855.4
U	9226	2350	852.3	3850	854.4	4650	855.2	6250	856.7	856.7	856.7
V	9851	2350	852.4	3850	854.5	4650	855.4	6250	856.9	856.9	856.9
W	10401	2350	852.6	3850	854.7	4650	855.5	6250	857.0	857.0	857.0
	11041	2350	852.6	3850	854.7	4650	855.5	6250	857.0	857.0	857.0

$\frac{1}{2}$ Distance in feet from corporate limits

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
CITY OF MARKESAN
FLOODPLAIN MANAGEMENT STUDY
GREEN LAKE COUNTY, WISCONSIN

DISCHARGE - ELEVATION DATA

GRAND RIVER

TABLE 1

Flooding Source		Discharge - Elevation							
Cross section	Distance $\frac{1}{2}$	10-year		50-year		100-year		500-year	
<u>East Tributary</u>		Q CFS	Elev. MSL	Q CFS	Elev. MSL	Q CFS	Elev. MSL	Q CFS	Elev. MSL
A	560	235 County Highway S	850.4	360	852.6	425	853.2	544	854.7
B	600		851.6	(John Street)					
C	750		851.7	360	853.4	425	853.6	544	854.7
D	2000		852.4	360	853.4	425	853.6	544	854.8
	3670			360	853.7	425	853.9	544	854.9
<u>West Tributary</u>									
A	580	350	844.7	540	846.6	630	847.5	820	849.1
B	630	John Street							
C	705	350	845.6	540	846.6	630	847.5	820	849.1
D	1225	350	847.4	540	848.0	630	848.4	820	849.5
E	1785	350	851.7	540	852.0	630	852.1	820	852.5
	2285	300	854.1	460	854.6	540	854.8	700	855.3
	2405	State Highway 44		(Margaret Street)					
F	2545	300	856.2	460	856.5	540	856.6	700	856.8
G	4065	260	860.2	400	860.4	460	860.5	600	860.7
H	4905	260	870.7	400	871.3	460	871.5	600	871.9

$\frac{1}{2}$ Distance in feet from confluence

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
CITY OF MARKESAN
FLOODPLAIN MANAGEMENT STUDY
GREEN LAKE COUNTY, WISCONSIN

DISCHARGE - ELEVATION DATA

EAST AND WEST TRIBUTARIES

TABLE 1

FLOODING SOURCE			FLOODWAY		BASE FLOOD WATER SURFACE ELEVATION ²		
CROSS SECTION	DISTANCE ¹	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (M.S.L.)	WITHOUT FLOODWAY (M.S.L.)	DIFFERENCE (FT.)
<u>Grand River</u>							
A	40	259	1572	3.8	844.1	844.1	0.0
B	305	262	2385	2.5	845.1	845.1	0.0
C	665	365	2441	2.5	845.3	845.3	0.0
D	1535	240	1492	4.0	845.6	845.6	0.0
E	2485	270	2305	2.6	846.8	846.8	0.0
F	3335	851	5159	1.2	847.4	847.4	0.0
G	3715	925	7208	0.8	847.5	847.5	0.0
H	4215	735	5062	1.2	847.6	847.6	0.0
I	4595	281	1501	3.9	847.3	847.3	0.0
J	4795	259	794	7.4	846.7	846.7	0.2
K	4960	384	1547	3.8	850.3	850.3	0.0
L	5260	241	1202	4.9	850.3	850.3	0.0
M	5380	254	1483	4.0	850.6	850.6	0.0
N	5640	163	1056	5.6	850.5	850.5	0.0
O	5826	90	795	7.4	850.8	850.8	0.0
P	6366	251	1054	5.6	852.2	852.2	0.0
Q	6786	258	1995	3.0	852.8	852.8	0.0
R	7206	312	1910	3.1	852.9	852.9	0.0
S	8546	387	2033	2.3	853.7	853.7	0.0
T	9226	170	1075	4.3	854.2	854.2	0.0
U	9851	300	1801	2.6	855.2	855.2	0.0
V	10401	501	2989	1.6	855.4	855.4	0.0
W	11041	781	4948	0.9	855.5	855.5	0.0

^{1/} Distance in feet from corporate limits

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
CITY OF MARKESAN
FLOODPLAIN MANAGEMENT STUDY
GREEN LAKE COUNTY, WISCONSIN

FLOODWAY DATA

GRAND RIVER

TABLE 2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION ²		
CROSS SECTION	DISTANCE ¹	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (M.S.L.)	WITHOUT FLOODWAY (M.S.L.)	DIFFERENCE (FT.)
<u>West Tributary</u>							
A	580	565	1314	0.60	847.5	847.5	0.0
B	705	180	372	1.89	847.5	847.5	0.0
C	1225	206	182	3.59	849.0	849.0	0.0
D	1785	215	271	2.77	852.1	852.1	0.0
E	2285	42	120	4.53	854.8	854.8	0.0
F	2545	141	230	2.41	856.6	856.6	0.0
G	4065	285	258	1.88	860.5	860.5	0.0
H	4905	40	66	7.28	871.5	871.5	0.0
<u>East Tributary</u>							
A	560	75	160	2.65	853.2	853.2	0.0
B	750	65	327	1.30	853.6	853.6	0.0
C	2000	624	2227	.19	853.6	853.6	0.0
D	3670	460	1249	.38	853.9	853.9	0.0

1/ Distance in feet from confluence

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
CITY OF MARKESAN
FLOODPLAIN MANAGEMENT STUDY
GREEN LAKE COUNTY, WISCONSIN

FLOODWAY DATA

EAST AND WEST TRIBUTARIES

TABLE 2

Appendix F

INVESTIGATIONS AND ANALYSIS

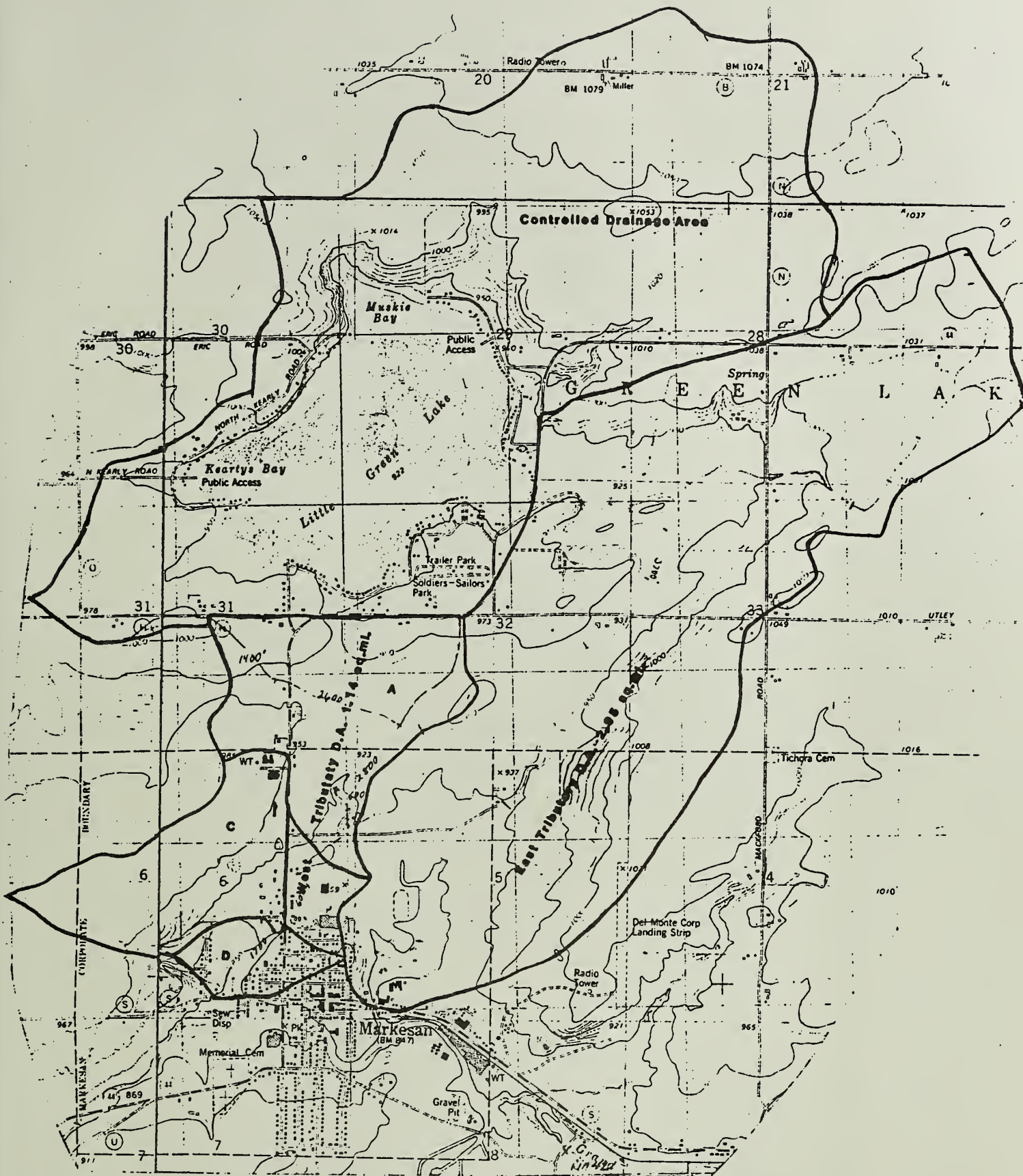
Investigation and Analysis

A hydraulic model of the Grand River was compiled from existing survey data that was supplemented by additional survey and data from 2-foot interval contour maps. The program used was the Corps of Engineer's HEC2 Water Surface Profiles. The flows were obtained from the HUD Flood Insurance Study for Green Lake County, Unincorporated Areas.

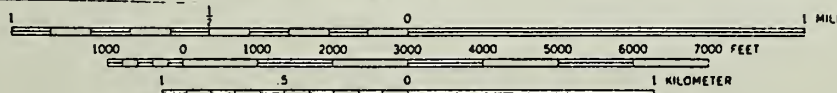
Two tributaries enter the Grand River in the community. The east tributary enters the Grand River east of High Street next to the Co-op Feed Mill. This stream is the outlet of Little Green Lake. The outlet consists of a 24-inch diameter culvert under State Highway 44 and a stoplog riser for lake management. The area draining into the lake consists of 2230 acres or 3.48 square miles. The surface area of the lake is 464 acres. Using a 100-year frequency rainfall of 5.6 inches and a runoff curve number of 74, 2.86 inches of runoff would be expected. The lake would contain this runoff at a depth of 1.2 feet. At this depth the outlet pipe will carry 30 cfs. Since the lake outlet is stable and the outflow is low, the flows for the study are based on the uncontrolled drainage area below the lake. This drainage area consists of 1890 acres or 2.95 square miles and generates a peak flow of 425 cfs.

The west tributary enters the Grand River west of Willow Court. This watershed is steeper than the east tributary and drains the area west of the high school and north from the junction of State Highway 44 and County H. The drainage area consists of 732 acres or 1.14 square miles. The drainage area was subdivided into four subareas dependent on where the subarea entered the channel. These areas were modeled using the computer program for Project Formulation, Hydrology (SCS-TR20)(3). The resultant flows range from 460 cfs above the high school to 630 cfs at John Street. The water surface elevations were then determined by the Water Surface Profile computer program (WSP2), Technical Release 61(4).

The floodplains are shown in appendix A and the water surface profiles are shown in appendix B. A tabulation of the computed elevations and discharges for the 10-, 50-, 100-, and 500-year floods are listed in appendix E.



SCALE



UTM GRID AND 1980 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

WATERSHED MAP **EAST & WEST TRIBUTARIES** **CITY OF MARKESAN FLOODPLAIN MANAGEMENT STUDY**



Appendix G

GLOSSARY

GLOSSARY

CHAPTER NR. 116, WISCONSIN'S FLOODPLAIN MANAGEMENT PROGRAM NR. 116.03 DEFINITIONS

Channel. A channel is a natural or artificial watercourse with definite bed and banks to confine and conduct the normal flow of water.

Department. Department refers to the State of Wisconsin Department of Natural Resources.

Encroachment. An encroachment is any fill, structure, building, use, accessory use, or development in the floodway.

Encroachment/Floodway Lines. Encroachment/floodway lines are limits of obstruction to floodflows. These lines are on both sides of and generally parallel to the river or stream. The lines are established by assuming that the area landward (outside) of the encroachment/floodway lines will be ultimately developed in such a way that it will not be available to convey floodflows.

Equal Degree of Hydraulic Encroachment. The effect of any encroachment into the floodway must be computed by assuming an equal degree of hydraulic encroachment on the other side of a river or stream for a hydraulic reach. This computation assures that property owners up, down, or across the river or stream will have the same rights of hydraulic encroachment. Encroachments are analyzed on the basis of the effect upon hydraulic conveyance, not upon the distance the encroachment extends into the floodway. Also see: Hydraulic Reach.

Flood. A general and temporary condition of partial or complete inundation of normally dry land areas caused by the overflow or rise of rivers, streams, or lakes.

Flood Frequency. The term flood frequency is a means of expressing the probability of flood occurrences and is generally determined from statistical analyses. The frequency of a particular floodflow is usually expressed as occurring, on the average, once in a specified number of years. Any particular floodflow could, however, occur more frequently than once in any given year.

Flood Fringe. The flood fringe is that portion of the floodplain outside of the floodway, which is covered by floodwaters during the regional flood; it is generally associated with standing water rather than rapidly flowing water.

Floodplain. The floodplain is the land which has been or may be hereafter covered by floodwater during the regional flood. The floodplain includes the floodway and the flood fringe.

Floodplain Management. Floodplain management involves the full range of public policy and action for insuring wise use of floodplains. It includes everything from the collection and dissemination of flood control information to actual acquisition of floodplain lands; and the enactment and administration of codes, ordinances, and statutes for land use in the floodplain.

Flood Proofing. Flood proofing involves any combination of structural provisions, changes, or adjustments to properties and structures subject to flooding, primarily for the purpose of reducing or eliminating flood damage to properties, water and sanitary facilities, structures and contents of buildings in flood hazard areas.

Flood Protection Elevation. The flood protection elevation shall correspond to a point 2 feet of freeboard above the water surface profile associated with the regional flood and the official floodway lines. Also see: Freeboard.

Floodway. The floodway is the channel of a river or stream and those portions of the floodplain adjoining the channel required to carry and discharge the floodwater or floodflows associated with the regional flood.

Freeboard. Freeboard is a factor of safety usually expressed in terms of a certain amount of feet above a calculated flood level. Freeboard compensates for the many unknown factors that contribute to flood heights greater than the height calculated. These unknown factors include, but are not limited to, ice jams, debris accumulation, wave action, obstruction of bridge openings and floodways, the effects of urbanization on the hydrology of the watershed, loss of flood storage areas due to development and aggradation of the river or streambed.

High Flood Damage Potential. High flood damage potential is associated with any danger to life or health and any significant economic loss to a structure or building or its contents.

Hydraulic Floodway Lines. Hydraulic floodway lines shall delineate the channel of the river or stream and those portions of the adjoining floodplains which are reasonably required to carry and discharge the regional floodflow without any measurable increase in flood heights.

Hydraulic Reach. A hydraulic reach along a river or stream is that portion of the river or stream extending from one significant change in the hydraulic character of the river or stream to the next significant change. These changes are usually associated with breaks in the slope of the water surface profile, and may be caused by bridges, dams, expansion and contraction of the waterflow, and changes in streambed slope or vegetation.

Levee. A levee is a continuous dike or embankment of earth constructed parallel to a river or stream to prevent flooding of certain areas of land.

Official Floodway Lines. Official floodway lines are those lines which have been adopted by the county, city, or village, approved by the department, and which are shown on the official floodplain zoning maps and used for regulatory purposes.

Regional Flood. The regional flood is a flood determined to be representative of large floods known to have generally occurred in Wisconsin and which may be expected to occur on a particular stream because of like physical characteristics. The regional flood is based upon a statistical analysis of streamflow records available for the watershed and/or an analysis of rainfall and runoff characteristics in the general watershed region. The flood frequency of the regional flood is once in every 100 years; this means that in any given year there is a 1 percent chance that the regional flood may occur. During a typical 30-year mortgage period, the regional flood has a 26 percent chance of occurring.

Structure. A structure is any manmade object with form, shape, and utility, either permanently or temporarily attached to or placed upon the ground, riverbed, streambed, or lakebed.

Watershed. A watershed is a region or area contributing ultimately to the water supply of a particular watercourse or body of water.

Water Surface Profile. The water surface profile is a graphical representation of the height of the water surface throughout a county, city, or village based upon a certain flow passing through the river or stream. A water surface profile based upon flows occurring during a regional flood is used in regulating the floodplain areas.

Appendix H

BIBLIOGRAPHY

Bibliography and Related References

1. Conger, Duane H., Techniques for Estimating Magnitude and Frequency of Floods for Wisconsin Streams, U.S. Department of the Interior, Geological Survey, Water Resources Division, Madison, Wisconsin, 1981.
2. State of Wisconsin, Blue Book, Wisconsin Legislative Reference Bureau, 1975.
3. USDA, Soil Conservation Service, Computer Program for Project Formulation Hydrology Technical Release No. 20, Washington, D.C., May 1965.
4. USDA, Soil Conservation Service, WSP-2 Computer Program, Technical Release No. 61, May 1976.
5. Shaw & Fredine, 1956. Wetlands of the United States. United States Department of Interior, Fish and Wildlife Service, Circular 39, 67 pages.
6. Interagency Advisory Committee on Water Data. Guidelines for Determining Flood Flow Frequency, Bulletin #17B, March 1982, U.S. Department of the Interior Geological Survey, Office of Water Data Coordination.



R0001 028182



R0001 028182



SOIL CONSERVATION SERVICE